



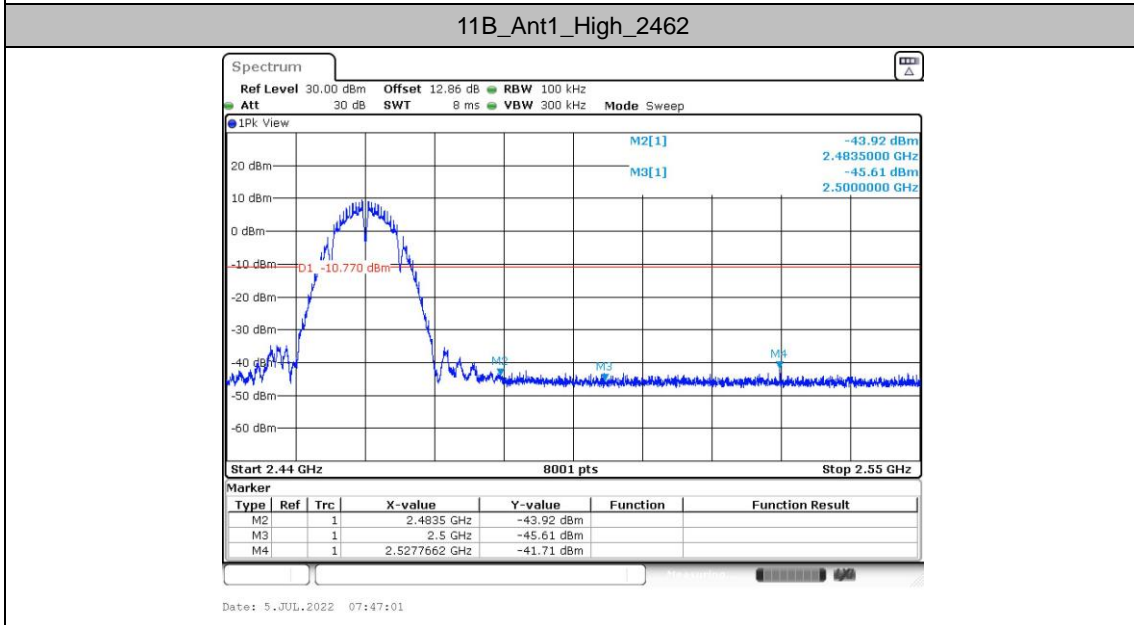
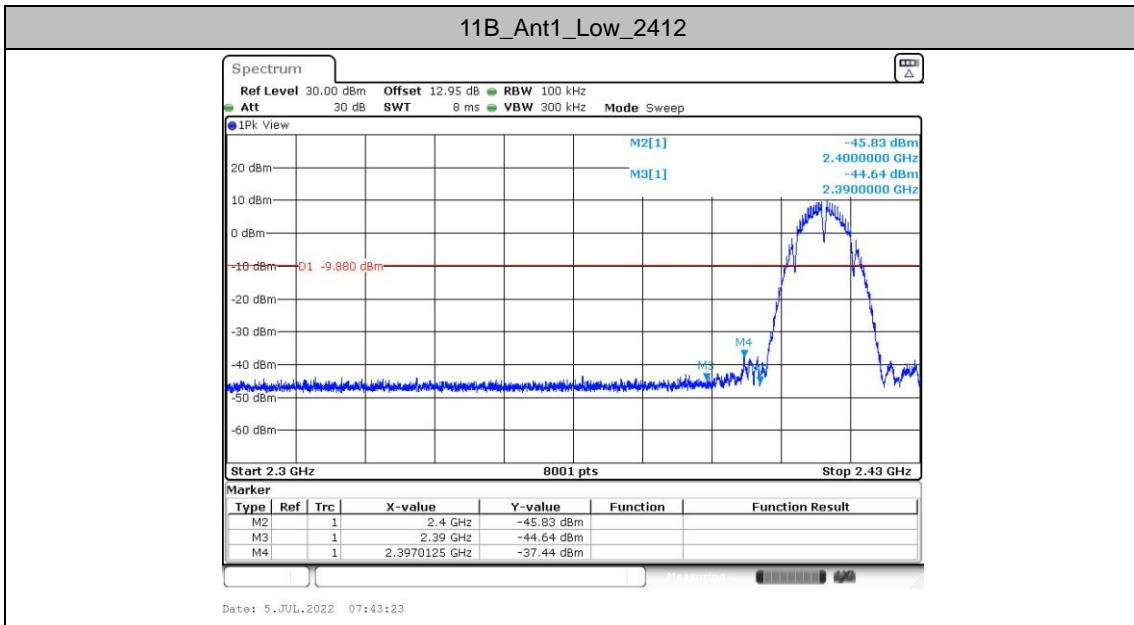
Band edge measurements

Test Result

TestMode	ChName	Frequency[MHz]	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
11B	Low	2412	10.12	-37.44	≤-9.88	PASS
	High	2462	9.23	-41.71	≤-10.77	PASS
11G	Low	2412	7.57	-19.06	≤-12.43	PASS
	High	2457	6.98	-40.15	≤-13.02	PASS
		2462	6.94	-32.69	≤-13.06	PASS
11N20SISO	Low	2412	7.03	-18.72	≤-12.97	PASS
	High	2457	6.90	-39.71	≤-13.1	PASS
		2462	6.25	-31.84	≤-13.75	PASS
11N40SISO	Low	2422	2.93	-23.08	≤-17.07	PASS
		2427	-0.06	-35.27	≤-20.06	PASS
	High	2442	1.10	-41.07	≤-18.9	PASS
		2447	0.21	-37.93	≤-19.79	PASS
		2452	3.96	-27.56	≤-16.04	PASS

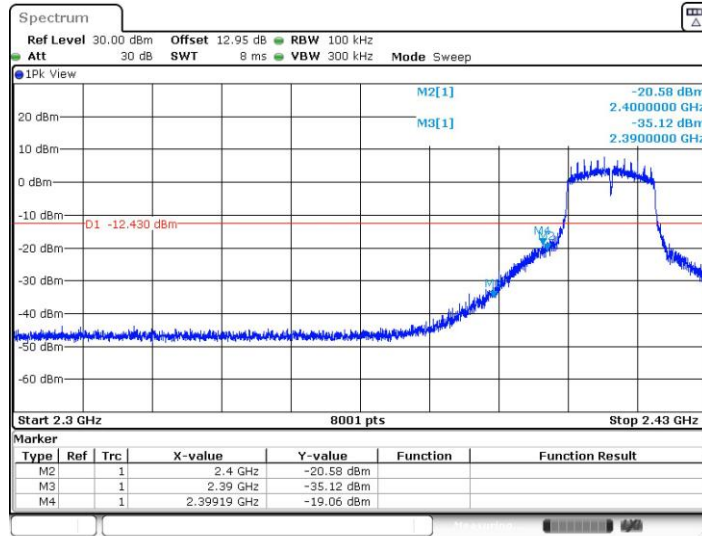


Test Graphs



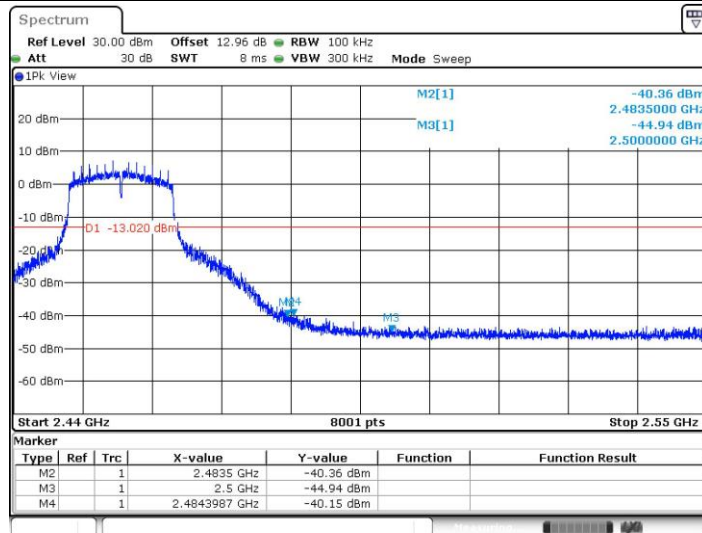


11G_Ant1_Low_2412

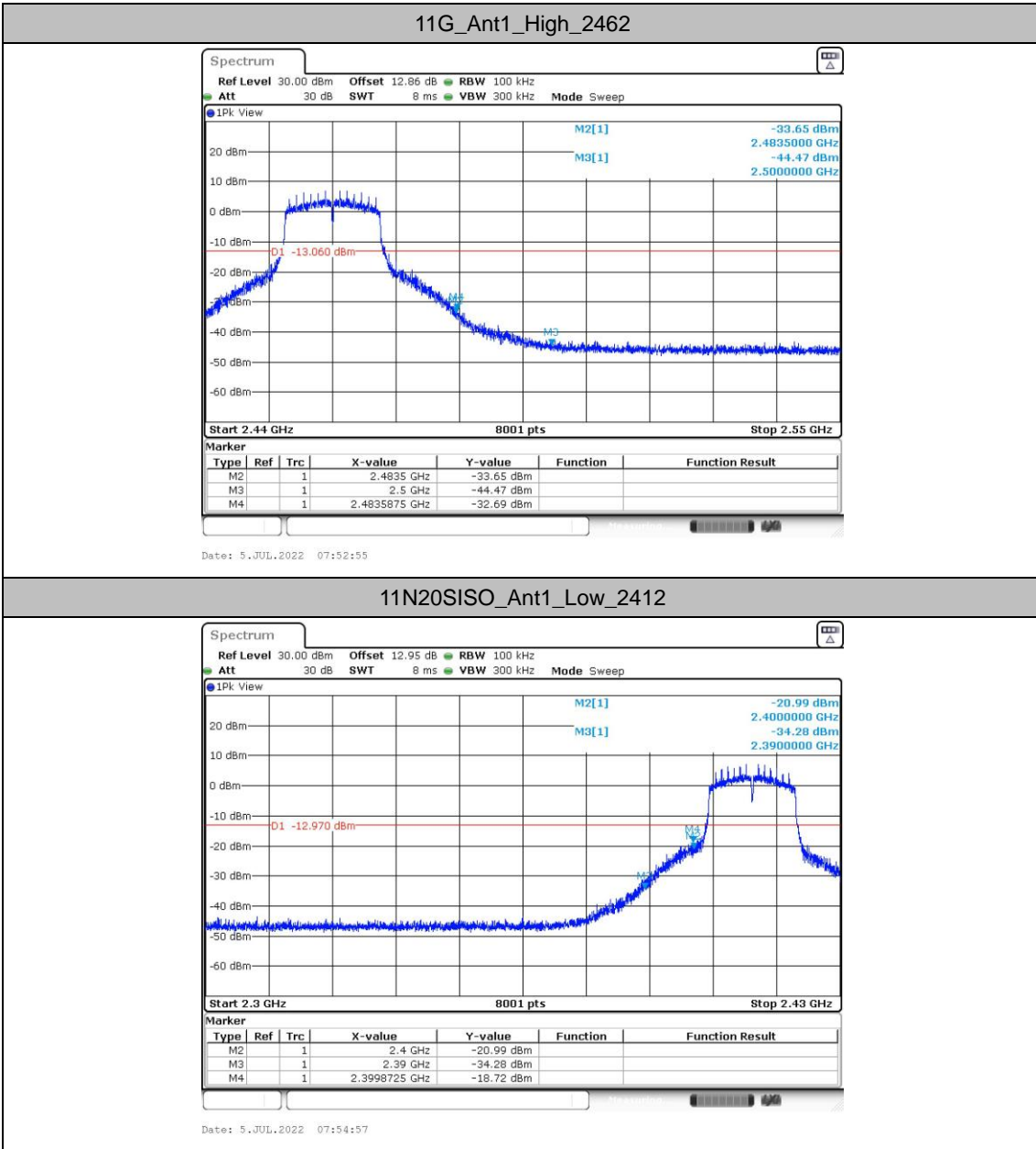


Date: 5.JUL.2022 07:49:07

11G_Ant1_High_2457

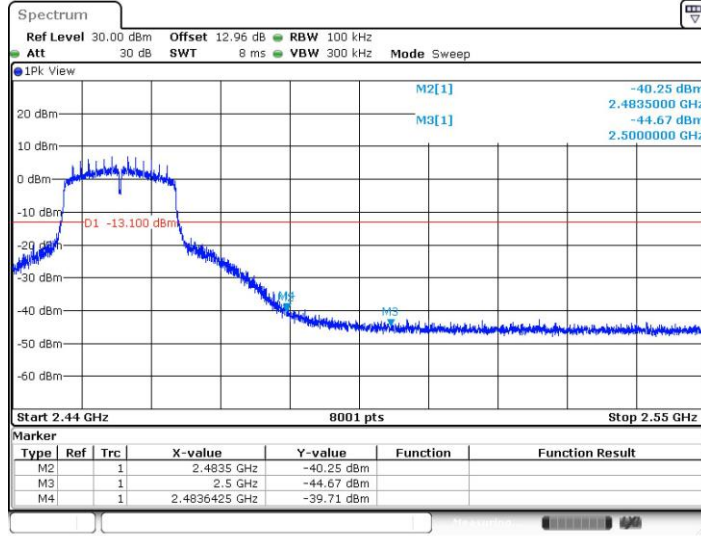


Date: 12.JUL.2022 08:41:01

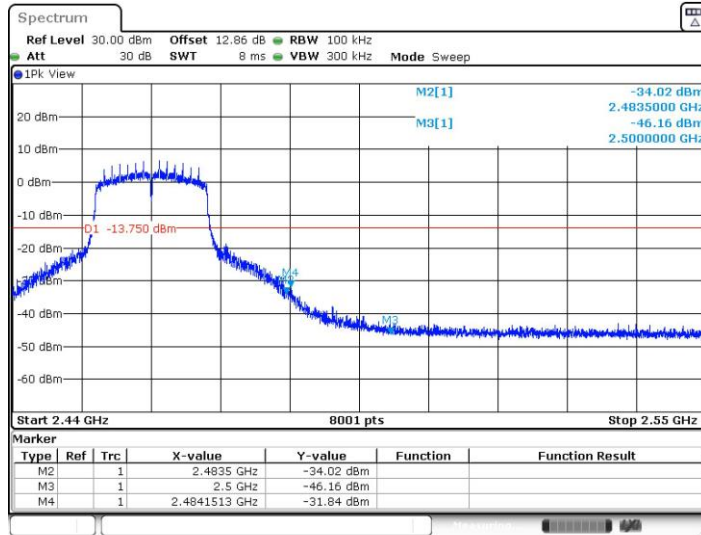


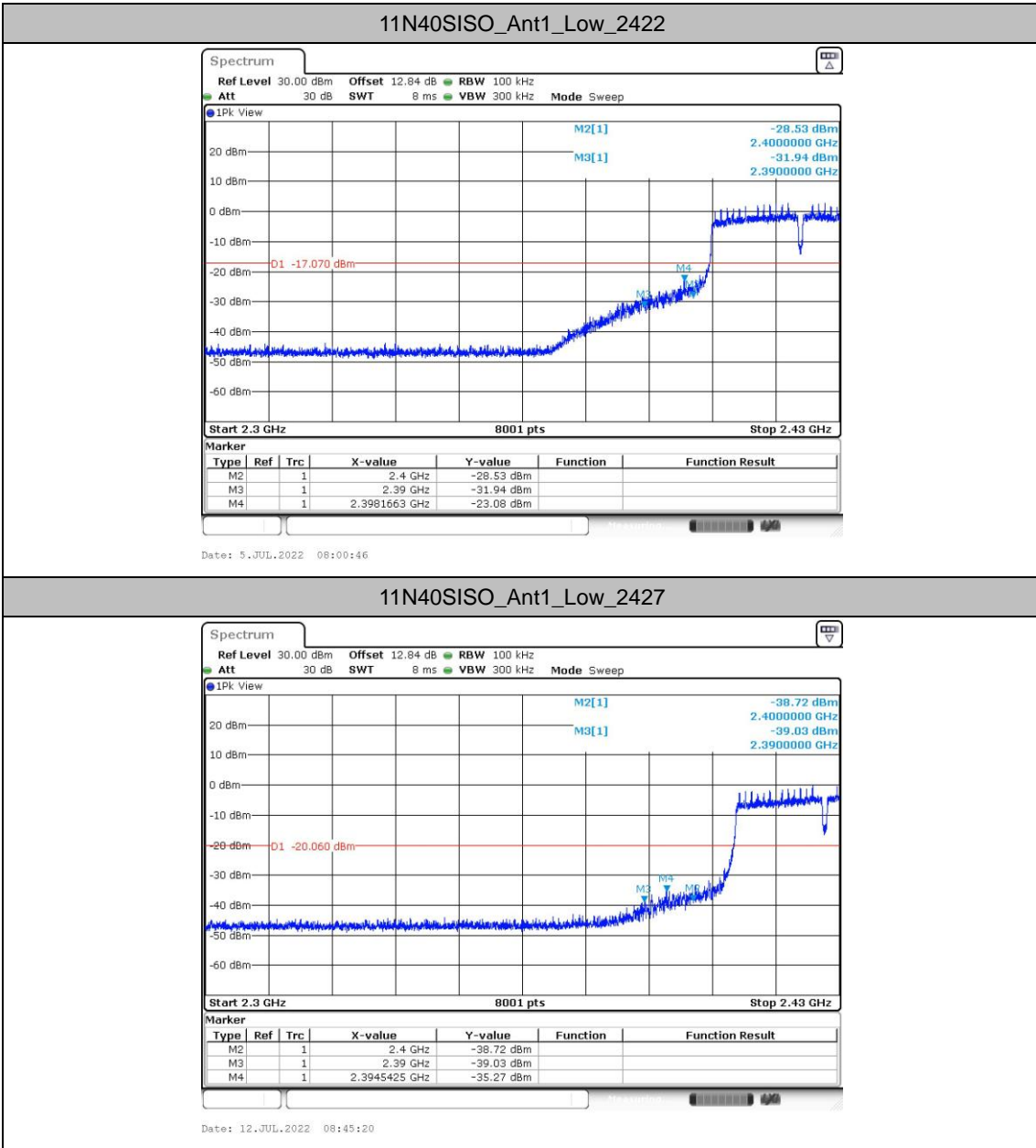


11N20SISO_Ant1_High_2457



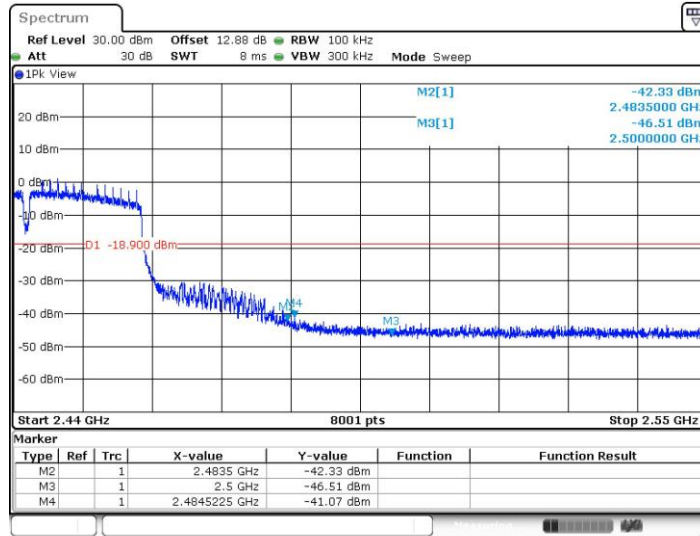
11N20SISO_Ant1_High_2462





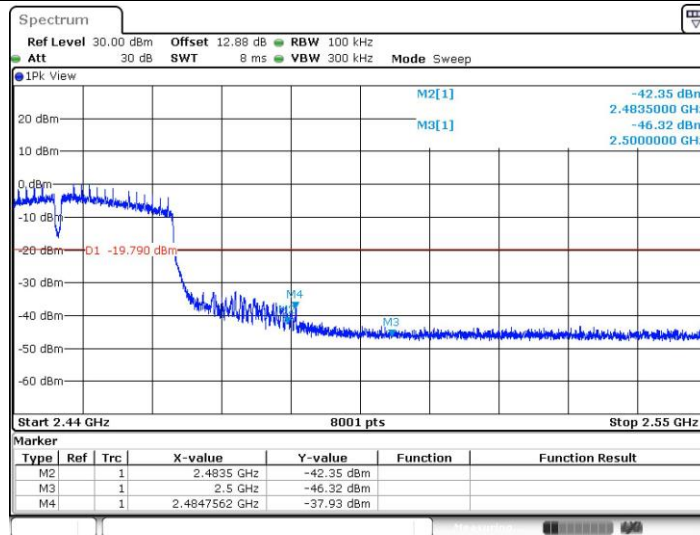


11N40SISO_Ant1_High_2442

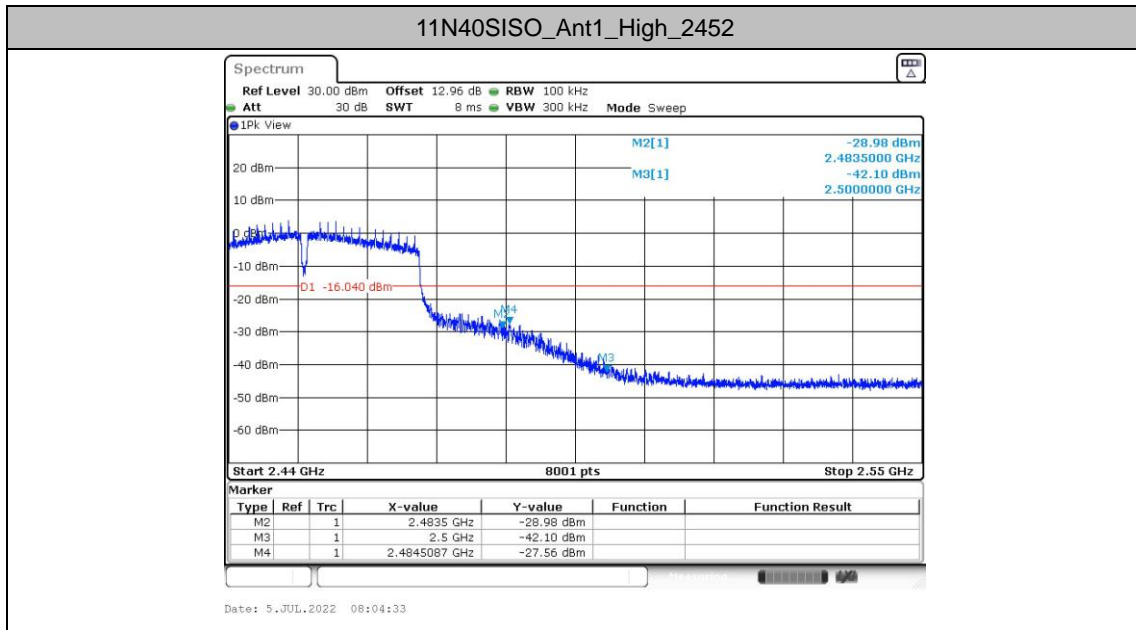


Date: 12.JUL.2022 08:50:25

11N40SISO_Ant1_High_2447



Date: 12.JUL.2022 08:47:23





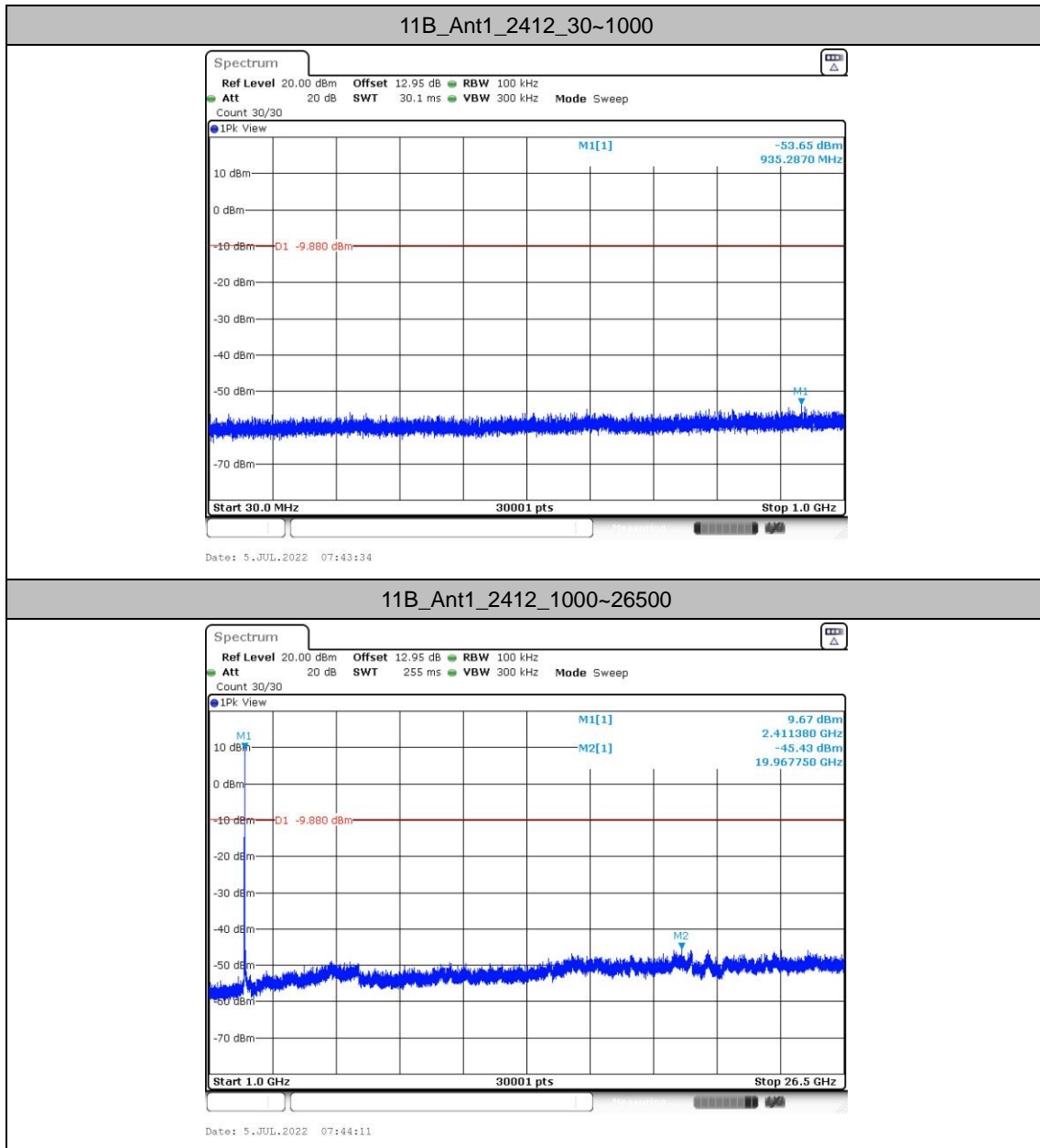
Conducted Spurious Emission

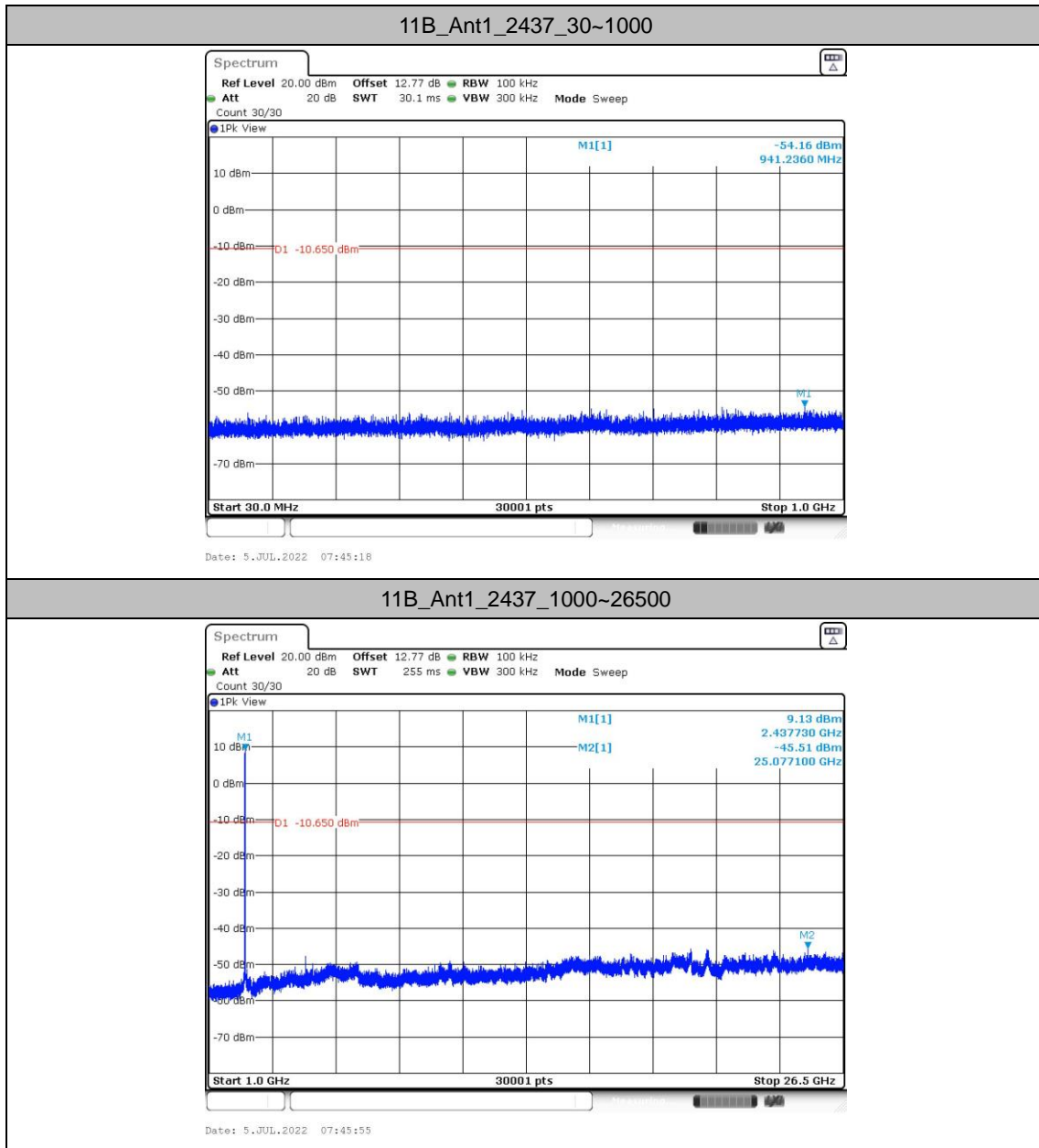
Test Result

TestMode	Frequency[MHz]	FreqRange [Mhz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
11B	2412	30~1000	10.12	-53.65	≤-9.88	PASS
		1000~26500	10.12	-45.43	≤-9.88	PASS
	2437	30~1000	9.35	-54.16	≤-10.65	PASS
		1000~26500	9.35	-45.51	≤-10.65	PASS
	2462	30~1000	9.23	-54.55	≤-10.77	PASS
		1000~26500	9.23	-45.62	≤-10.77	PASS
11G	2412	30~1000	7.57	-54.17	≤-12.43	PASS
		1000~26500	7.57	-45.2	≤-12.43	PASS
	2437	30~1000	6.75	-54.16	≤-13.25	PASS
		1000~26500	6.75	-45.86	≤-13.25	PASS
	2457	30~1000	6.98	-54.22	≤-13.02	PASS
		1000~26500	6.98	-45.98	≤-13.02	PASS
	2462	30~1000	6.94	-54.35	≤-13.06	PASS
		1000~26500	6.94	-45.55	≤-13.06	PASS
11N20SISO	2412	30~1000	7.03	-54.32	≤-12.97	PASS
		1000~26500	7.03	-45.24	≤-12.97	PASS
	2437	30~1000	6.23	-52.88	≤-13.77	PASS
		1000~26500	6.23	-45.76	≤-13.77	PASS
	2457	30~1000	6.90	-53.63	≤-13.1	PASS
		1000~26500	6.90	-44.85	≤-13.1	PASS
	2462	30~1000	6.25	-54.42	≤-13.75	PASS
		1000~26500	6.25	-45.34	≤-13.75	PASS
11N40SISO	2422	30~1000	2.93	-54.37	≤-17.07	PASS
		1000~26500	2.93	-45.2	≤-17.07	PASS
	2427	30~1000	-0.06	-55.12	≤-20.06	PASS
		1000~26500	-0.06	-45.4	≤-20.06	PASS
	2437	30~1000	3.18	-54.65	≤-16.82	PASS
		1000~26500	3.18	-44.93	≤-16.82	PASS
	2442	30~1000	1.10	-54.2	≤-18.9	PASS
		1000~26500	1.10	-43.96	≤-18.9	PASS
	2447	30~1000	0.21	-54.5	≤-19.79	PASS
		1000~26500	0.21	-44.99	≤-19.79	PASS
	2452	30~1000	3.96	-53.74	≤-16.04	PASS
		1000~26500	3.96	-45.48	≤-16.04	PASS



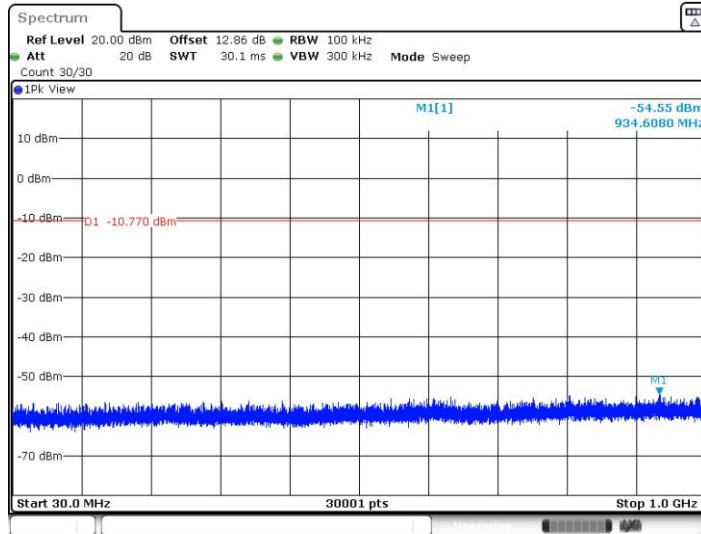
Test Graphs





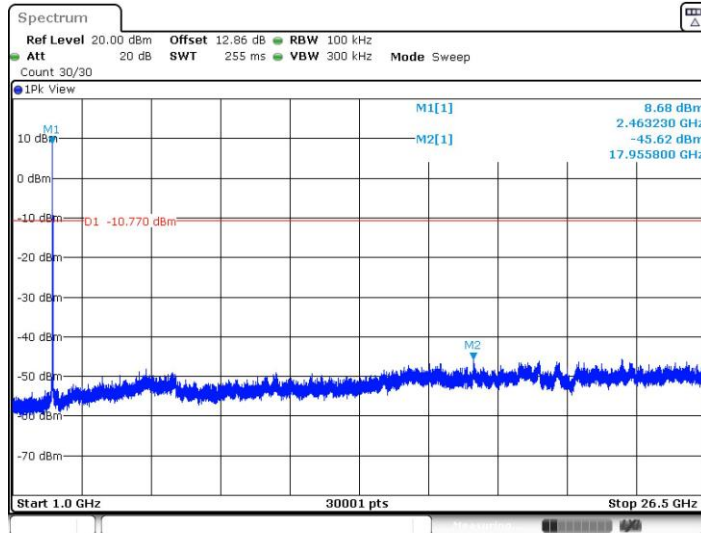


11B_Ant1_2462_30~1000



Date: 5.JUL.2022 07:47:11

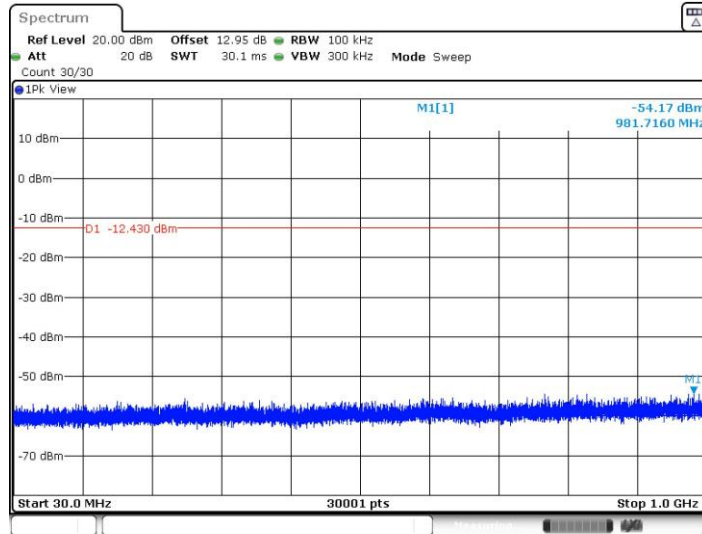
11B_Ant1_2462_1000~26500



Date: 5.JUL.2022 07:47:48

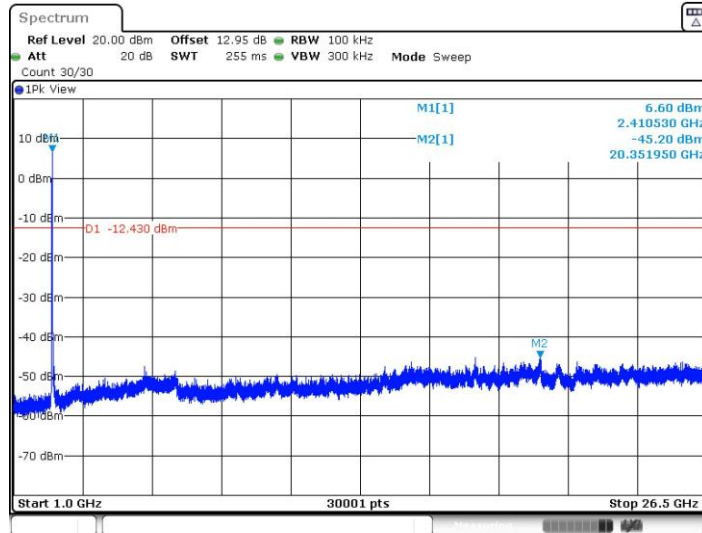


11G_Ant1_2412_30~1000



Date: 5.JUL.2022 07:49:18

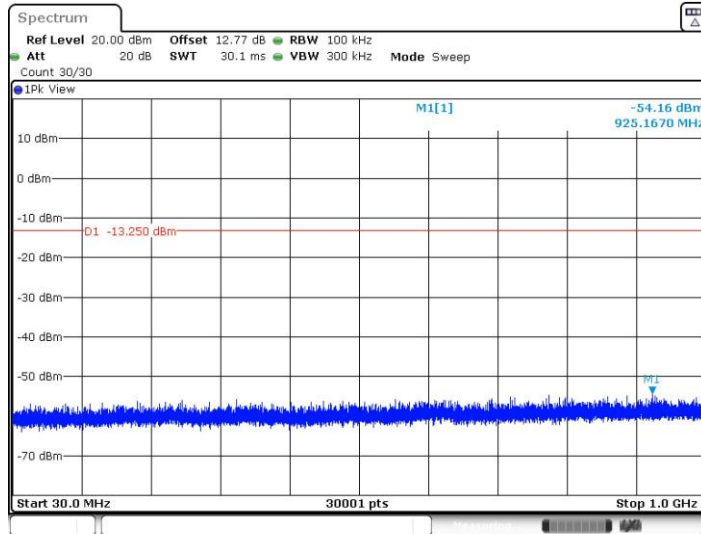
11G_Ant1_2412_1000~26500



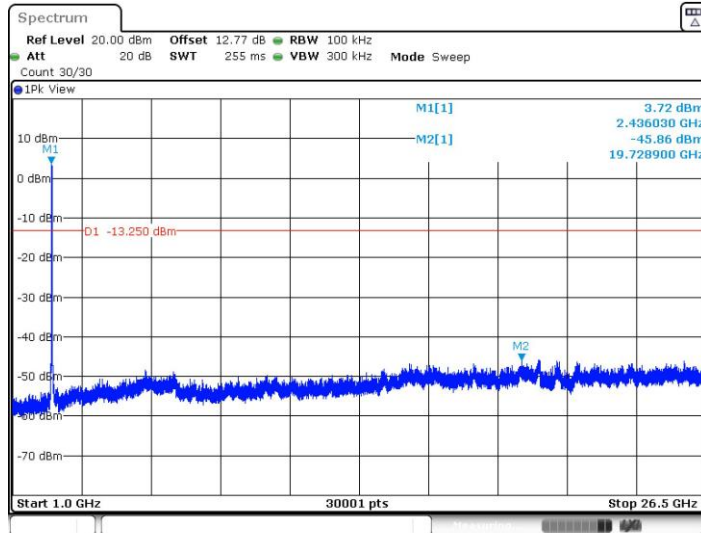
Date: 5.JUL.2022 07:49:55



11G_Ant1_2437_30~1000

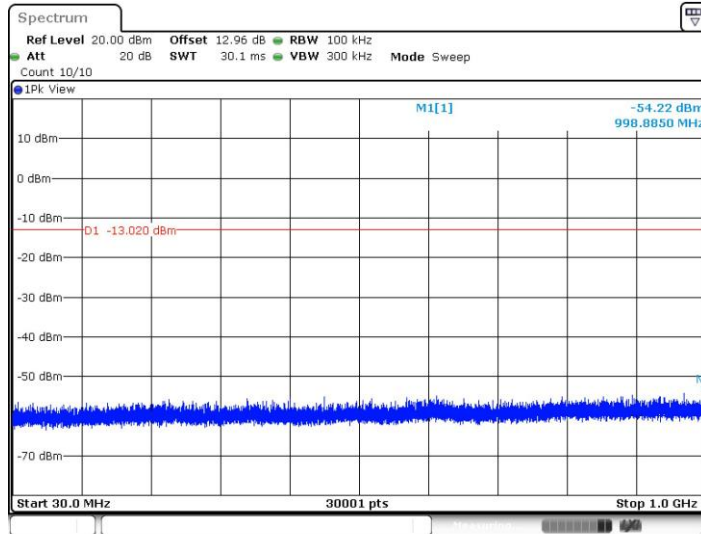


11G_Ant1_2437_1000~26500



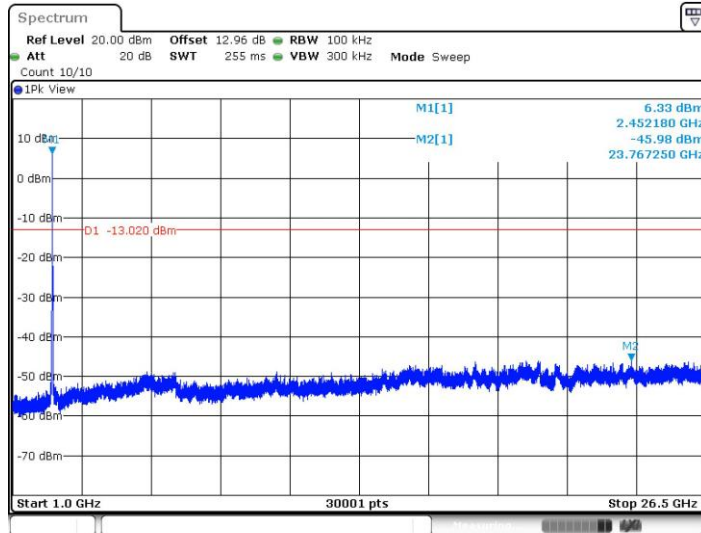


11G_Ant1_2457_30~1000



Date: 12.JUL.2022 08:41:13

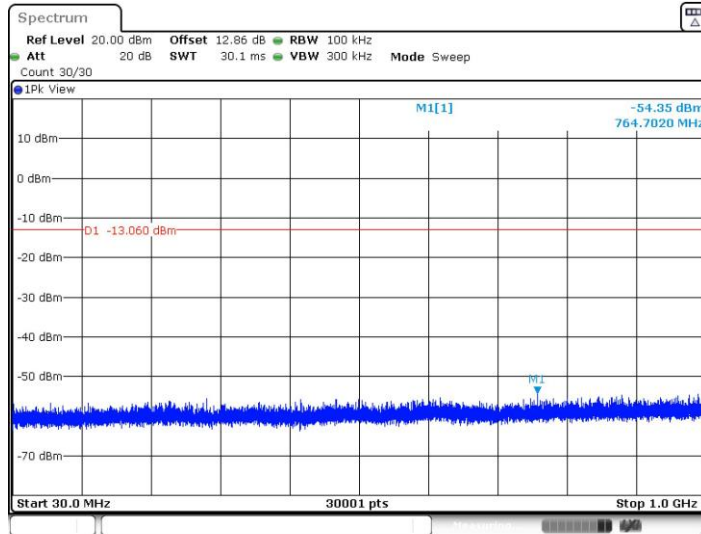
11G_Ant1_2457_1000~26500



Date: 12.JUL.2022 08:41:49

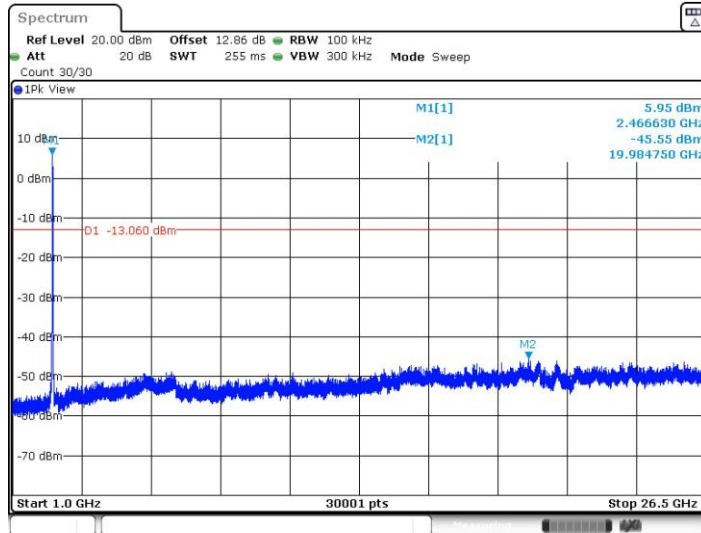


11G_Ant1_2462_30~1000

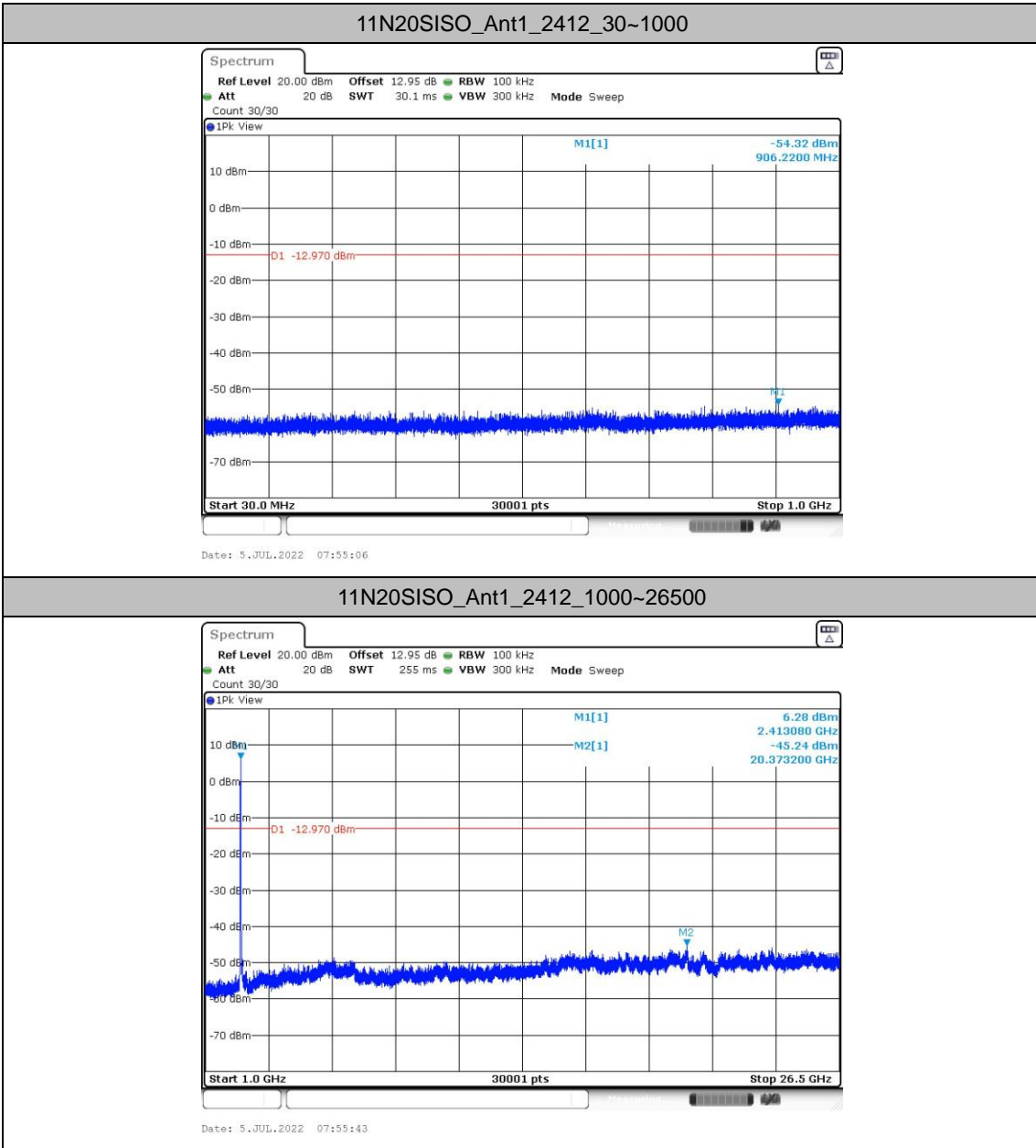


Date: 5.JUL.2022 07:53:04

11G_Ant1_2462_1000~26500

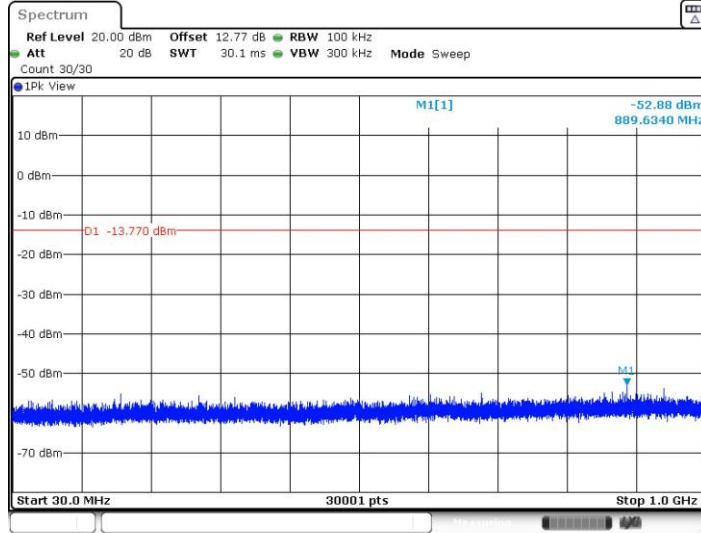


Date: 5.JUL.2022 07:53:41



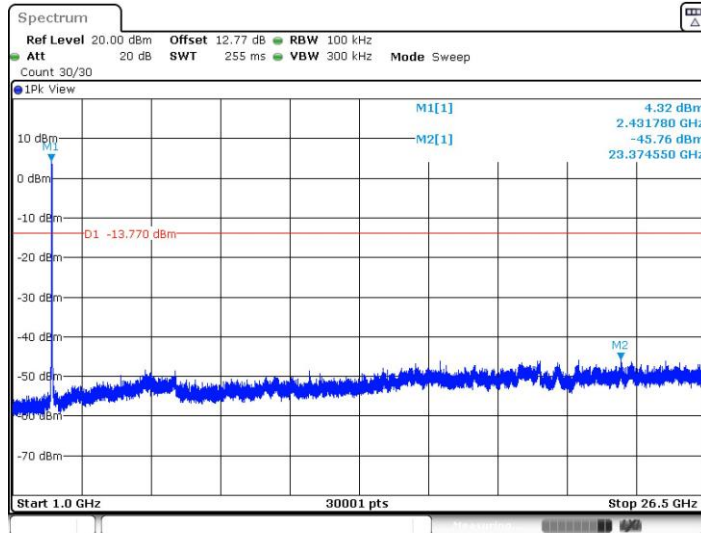


11N20SISO_Ant1_2437_30~1000



Date: 5.JUL.2022 07:56:53

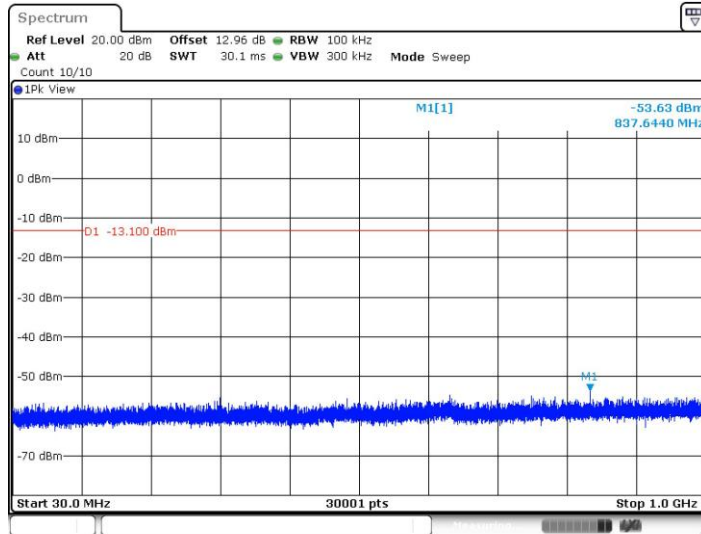
11N20SISO_Ant1_2437_1000~26500



Date: 5.JUL.2022 07:57:29

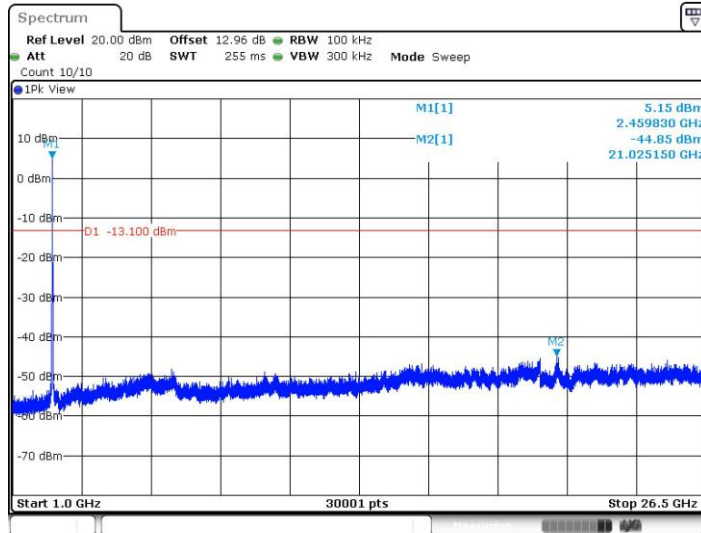


11N20SISO_Ant1_2457_30~1000



Date: 12.JUL.2022 08:43:10

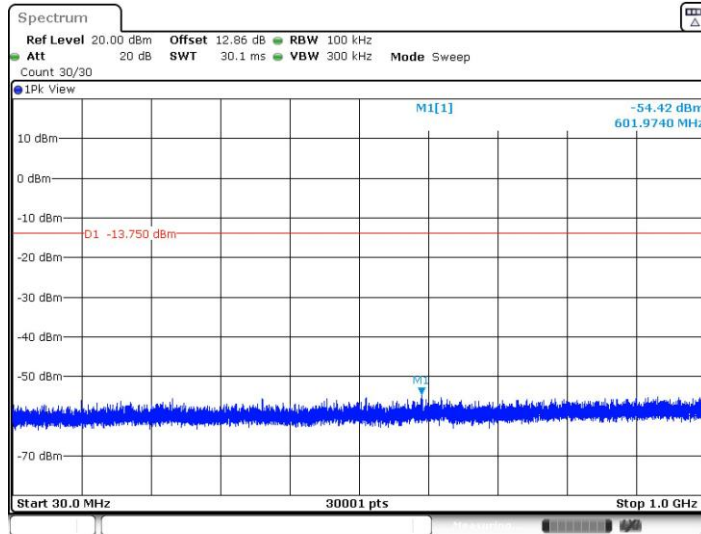
11N20SISO_Ant1_2457_1000~26500



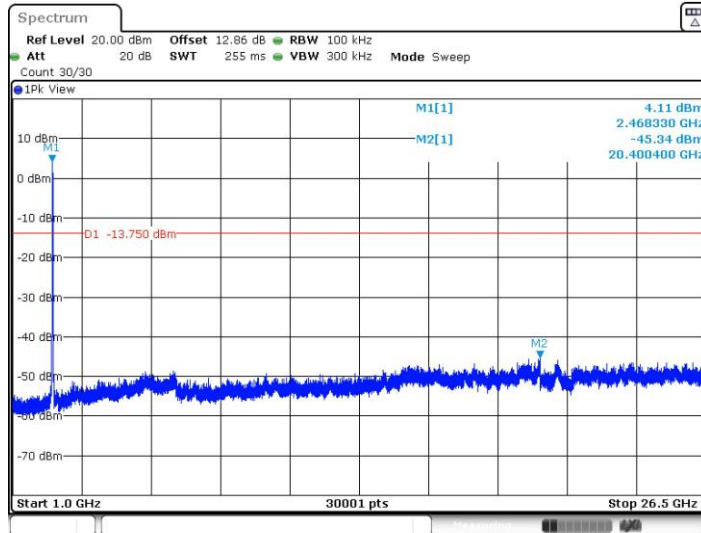
Date: 12.JUL.2022 08:43:47



11N20SISO_Ant1_2462_30~1000

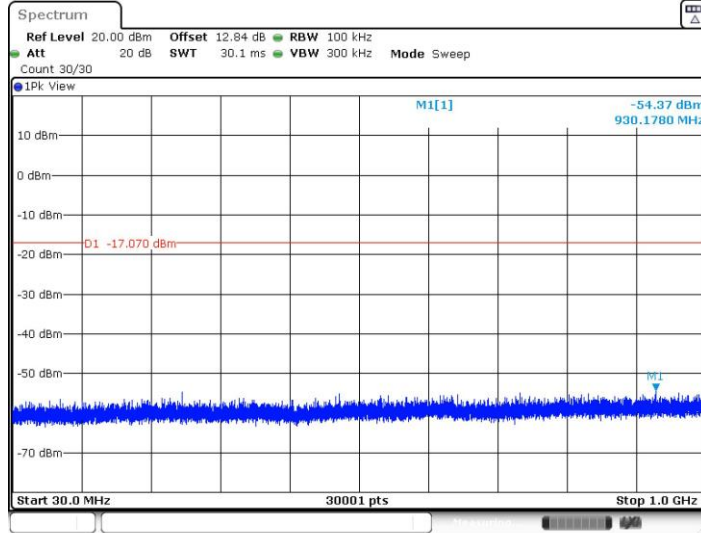


11N20SISO_Ant1_2462_1000~26500

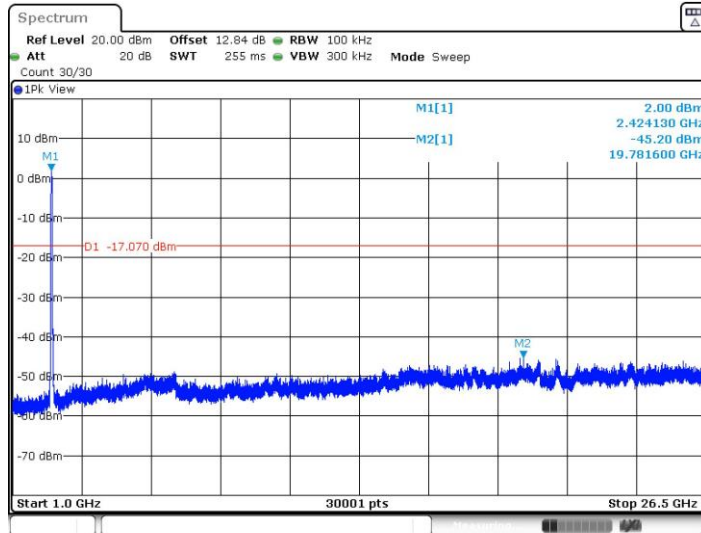




11N40SISO_Ant1_2422_30~1000

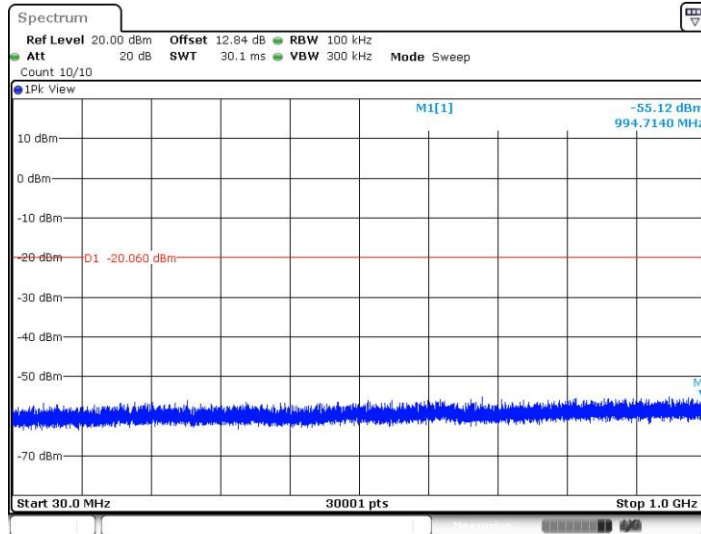


11N40SISO_Ant1_2422_1000~26500



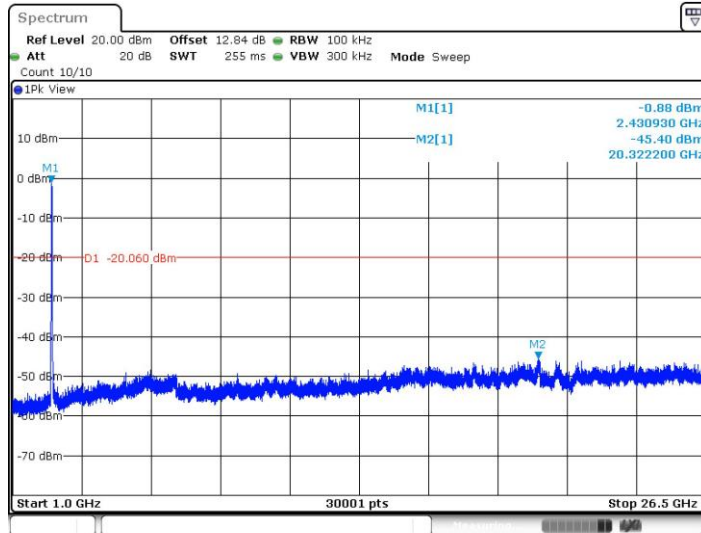


11N40SISO_Ant1_2427_30~1000



Date: 12.JUL.2022 08:45:31

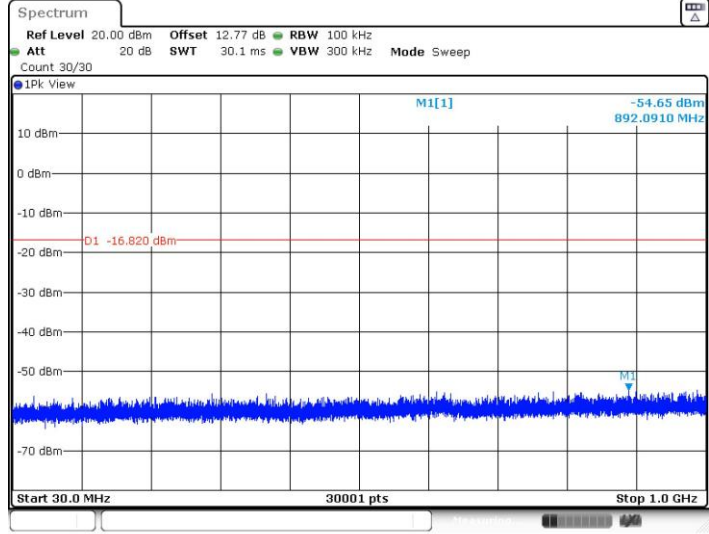
11N40SISO_Ant1_2427_1000~26500



Date: 12.JUL.2022 08:46:08

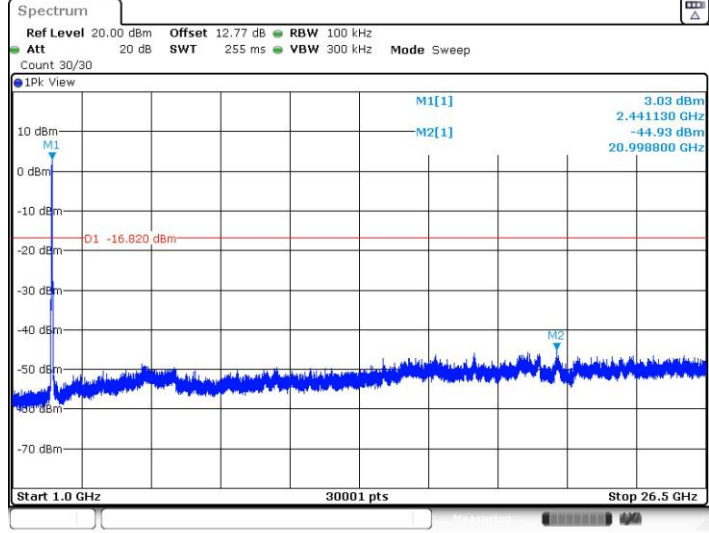


11N40SISO_Ant1_2437_30~1000



Date: 5.JUL.2022 08:02:39

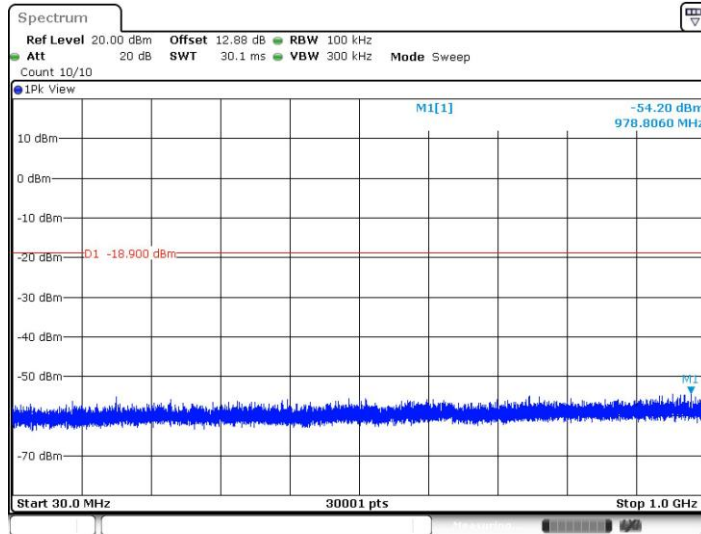
11N40SISO_Ant1_2437_1000~26500



Date: 5.JUL.2022 08:03:16

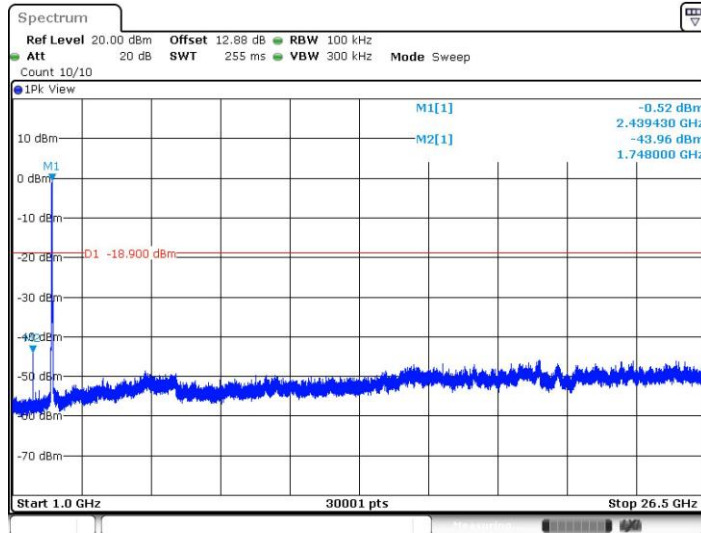


11N40SISO_Ant1_2442_30~1000



Date: 12.JUL.2022 08:50:36

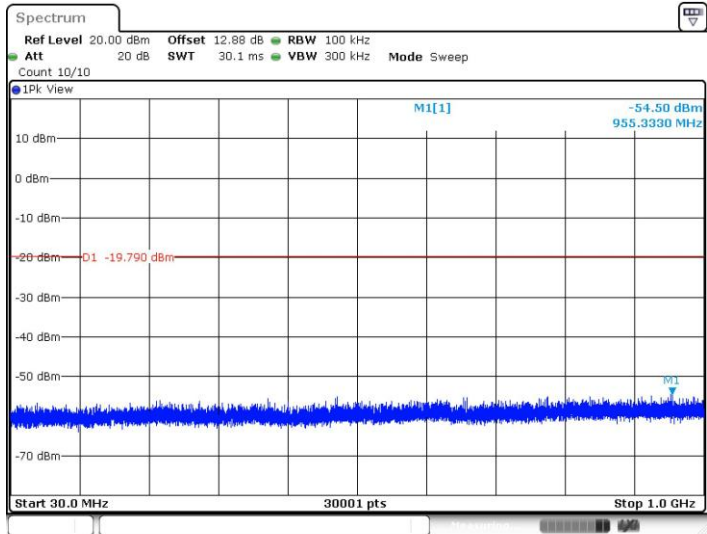
11N40SISO_Ant1_2442_1000~26500



Date: 12.JUL.2022 08:51:13

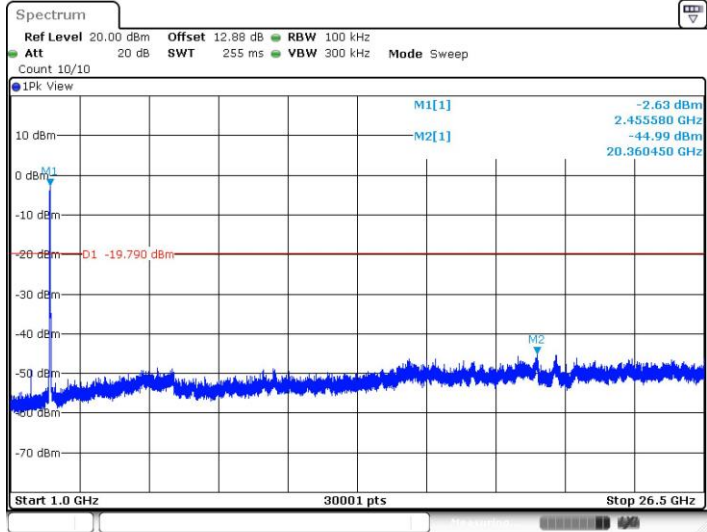


11N40SISO_Ant1_2447_30~1000



Date: 12.JUL.2022 08:47:33

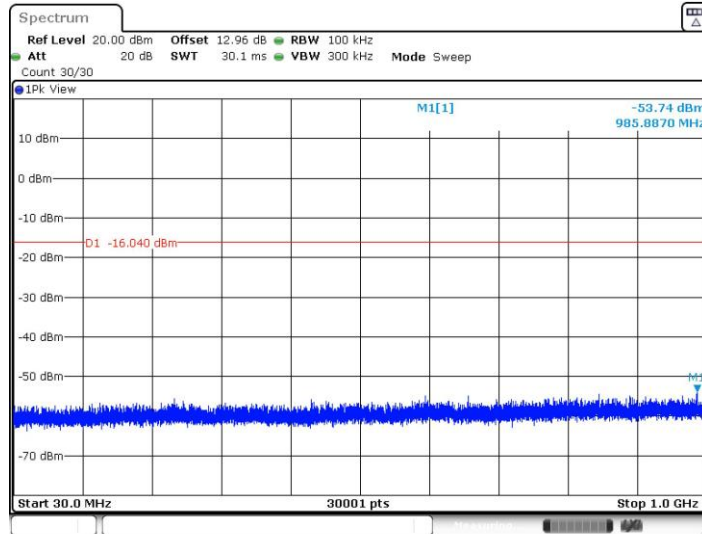
11N40SISO_Ant1_2447_1000~26500



Date: 12.JUL.2022 08:48:10

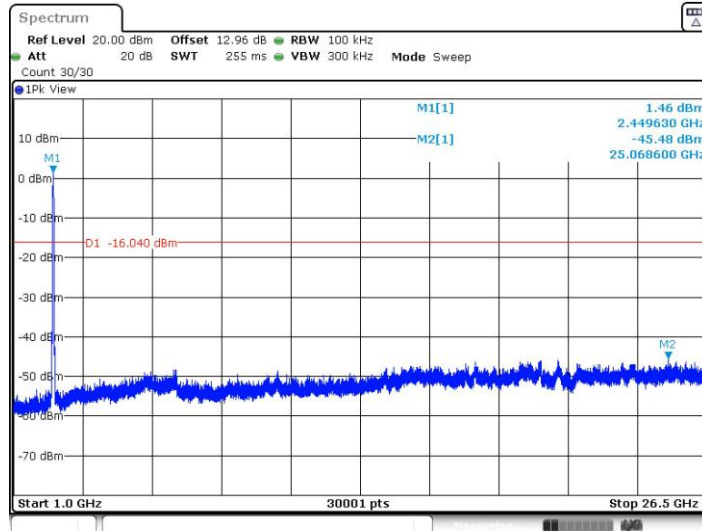


11N40SISO_Ant1_2452_30~1000



Date: 5.JUL.2022 08:04:44

11N40SISO_Ant1_2452_1000~26500

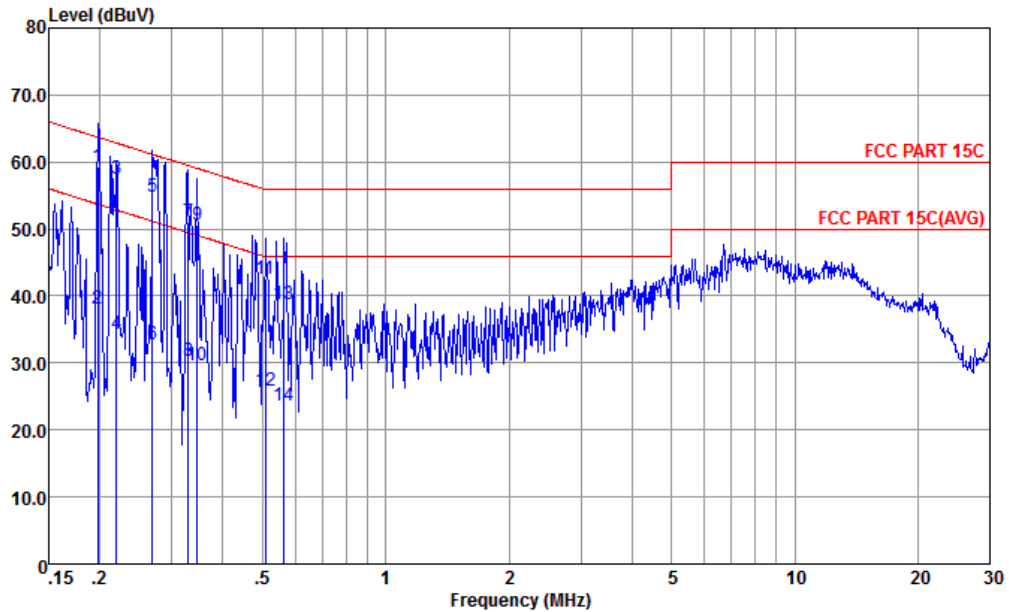


Date: 5.JUL.2022 08:05:21



Appendix B. AC Conducted Emission Test Results

Test Engineer :	Amos Zhang	Temperature :	25.3~26.2°C
		Relative Humidity :	38~40%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		

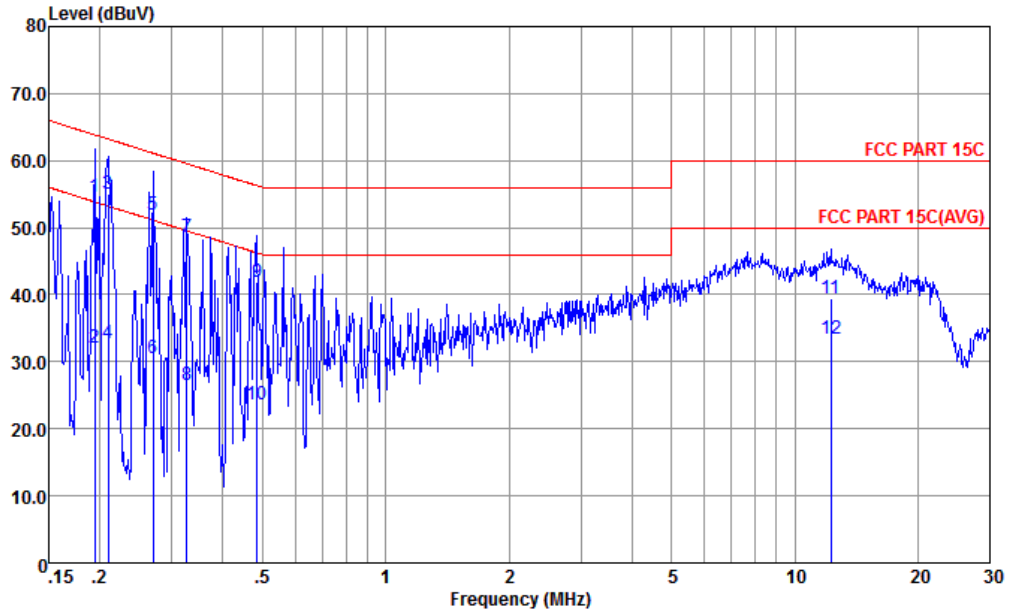


Site : CO01-KS
 Condition : FCC PART 15C LISN-060105-L LINE

	Freq	Level	Over	Limit	Read	LISN	Cable	Remark
	MHz	dBuV	Limit	Line	Level	Factor	Loss	
			dB	dBuV	dBuV	dB	dB	
1 *	0.198	59.31	-4.40	63.71	48.90	0.04	10.37	QP
2	0.198	38.01	-15.70	53.71	27.60	0.04	10.37	Average
3	0.220	57.50	-5.33	62.83	47.10	0.05	10.35	QP
4	0.220	34.30	-18.53	52.83	23.90	0.05	10.35	Average
5	0.269	54.88	-6.28	61.16	44.50	0.06	10.32	QP
6	0.269	32.68	-18.48	51.16	22.30	0.06	10.32	Average
7	0.329	50.97	-8.52	59.49	40.60	0.08	10.29	QP
8	0.329	30.27	-19.22	49.49	19.90	0.08	10.29	Average
9	0.346	50.57	-8.48	59.05	40.20	0.08	10.29	QP
10	0.346	29.67	-19.38	49.05	19.30	0.08	10.29	Average
11	0.507	42.54	-13.46	56.00	32.20	0.10	10.24	QP
12	0.507	25.84	-20.16	46.00	15.50	0.10	10.24	Average
13	0.564	38.84	-17.16	56.00	28.50	0.10	10.24	QP
14	0.564	23.64	-22.36	46.00	13.30	0.10	10.24	Average



Test Engineer :	Amos Zhang	Temperature :	25.3~26.2°C
		Relative Humidity :	38~40%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



Site : CO01-KS
Condition : FCC PART 15C LISN-060105-N NEUTRAL

	Freq	Level	Over	Limit	Read	LISN	Cable	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.194	54.68	-9.16	63.84	44.21	0.10	10.37	QP
2	0.194	32.08	-21.76	53.84	21.61	0.10	10.37	Average
3 *	0.209	55.06	-8.17	63.23	44.60	0.10	10.36	QP
4	0.209	32.76	-20.47	53.23	22.30	0.10	10.36	Average
5	0.270	51.92	-9.20	61.12	41.50	0.10	10.32	QP
6	0.270	30.62	-20.50	51.12	20.20	0.10	10.32	Average
7	0.327	48.60	-10.93	59.53	38.21	0.10	10.29	QP
8	0.327	26.60	-22.93	49.53	16.21	0.10	10.29	Average
9	0.484	41.85	-14.42	56.27	31.50	0.11	10.24	QP
10	0.484	23.65	-22.62	46.27	13.30	0.11	10.24	Average
11	12.253	39.44	-20.56	60.00	28.80	0.27	10.37	QP
12	12.253	33.44	-16.56	50.00	22.80	0.27	10.37	Average

Note:

- Level(dBμV) = Read Level(dBμV) + LISN Factor(dB) + Cable Loss(dB)
- Over Limit(dB) = Level(dBμV) – Limit Line(dBμV)



Appendix C. Radiated Spurious Emission

Only the worst mode for 11b/g/n are reported.

2.4GHz 2400~2483.5MHz

WIFI 802.11b (Band Edge @ 3m)

WIFI Ant.	Note	Frequency	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Path Loss	Preamp Factor	Ant Pos	Table Pos	Peak Avg.	Pol.
1		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11b CH 11 2462MHz	*	2462	107.27	-	-	103.92	32.96	7.22	36.83	378	113	P	H
		2462	104.74	-	-	101.39	32.96	7.22	36.83	378	113	A	H
	*	2483.5	51.8	-22.2	74	48.39	32.98	7.25	36.82	378	113	P	H
		2483.5	44.36	-9.64	54	40.95	32.98	7.25	36.82	378	113	A	H
	*	2462	102.4	-	-	99.05	32.96	7.22	36.83	382	65	P	V
	*	2462	100.11	-	-	96.76	32.96	7.22	36.83	382	65	A	V
		2488.48	51.07	-22.93	74	47.63	33	7.25	36.81	382	65	P	V
		2483.5	42.53	-11.47	54	39.12	32.98	7.25	36.82	382	65	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

2.4GHz 2400~2483.5MHz

WIFI 802.11b (Harmonic @ 3m)

WIFI Ant.	Note	Frequency	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Path Loss	Preamp Factor	Ant Pos	Table Pos	Peak Avg.	Pol.
1		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11b CH 11 2462MHz		4920	44.77	-29.23	74	65.62	34.26	10.34	65.45	300	0	P	H
		7380	42.94	-31.06	74	60.44	35.88	12.73	66.11	300	0	P	H
		4920	44.77	-29.23	74	65.62	34.26	10.34	65.45	100	0	P	V
		7380	41.84	-32.16	74	59.34	35.88	12.73	66.11	100	0	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



2.4GHz 2400~2483.5MHz
WIFI 802.11g (Band Edge @ 3m)

Table with 14 columns: WIFI Ant. 1, Note, Frequency (MHz), Level (dBµV/m), Over Limit (dB), Limit Line (dBµV/m), Read Level (dBµV), Antenna Factor (dB/m), Path Loss (dB), Preamp Factor (dB), Ant Pos (cm), Table Pos (deg), Peak Avg. (P/A), Pol. (H/V). Contains 8 rows of test data and a Remark section.

2.4GHz 2400~2483.5MHz
WIFI 802.11g (Harmonic @ 3m)

Table with 14 columns: WIFI Ant. 1, Note, Frequency (MHz), Level (dBµV/m), Over Limit (dB), Limit Line (dBµV/m), Read Level (dBµV), Antenna Factor (dB/m), Path Loss (dB), Preamp Factor (dB), Ant Pos (cm), Table Pos (deg), Peak Avg. (P/A), Pol. (H/V). Contains 2 rows of test data and a Remark section.



**2.4GHz 2400~2483.5MHz
WIFI 802.11n HT40 (Band Edge @ 3m)**

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n HT40 CH 03 2422MHz		2389.82	67.91	-6.09	74	64.79	32.88	7.1	36.86	100	37	P	H
		2389.82	50.73	-3.27	54	47.61	32.88	7.1	36.86	100	37	A	H
	*	2420	100.37	-	-	97.14	32.92	7.16	36.85	100	37	P	H
	*	2416	93.12	-	-	89.91	32.9	7.16	36.85	100	37	A	H
		2493.82	52.28	-21.72	74	48.81	33	7.28	36.81	100	37	P	H
		2499.94	43.11	-10.89	54	39.64	33	7.28	36.81	100	37	A	H
		2389.82	63.44	-10.56	74	60.32	32.88	7.1	36.86	391	66	P	V
		2389.95	46.55	-7.45	54	43.43	32.88	7.1	36.86	391	66	A	V
	*	2424	99.07	-	-	95.84	32.92	7.16	36.85	391	66	P	V
	*	2424	92.11	-	-	88.88	32.92	7.16	36.85	391	66	A	V
		2499.94	49.41	-24.59	74	45.94	33	7.28	36.81	391	66	P	V
		2500	40.52	-13.48	54	37.05	33	7.28	36.81	391	66	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

**2.4GHz 2400~2483.5MHz
WIFI 802.11n HT40 (Harmonic @ 3m)**

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n HT40 CH 03 2422MHz		4844	40.12	-33.88	74	61.05	34.21	10.25	65.39	300	0	P	H
		7266	42.11	-31.89	74	59.34	35.86	12.72	65.81	300	0	P	H
		4844	40.74	-33.26	74	61.67	34.21	10.25	65.39	100	0	P	V
		7266	42.29	-31.71	74	59.52	35.86	12.72	65.81	100	0	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Emission below 1GHz
2.4GHz WIFI 802.11g (LF)

Table with 14 columns: WIFI, Note, Frequency, Level, Over, Limit, Read, Antenna, Path, Preamp, Ant, Table, Peak, Pol. It contains 12 rows of test data for 2.4GHz WIFI 802.11g LF and a Remark section at the bottom.



<Simultaneous transmission>

2.4GHz 2400~2483.5MHz

WIFI 802.11g &EDGE850 (Band Edge @ 3m)

WIFI Ant.	Note	Frequency	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Path Loss	Preamp Factor	Ant Pos	Table Pos	Peak Avg.	Pol.
1		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11g CH 01 2412MHz		2389.82	66.46	-7.54	74	63.34	32.88	7.1	36.86	276	108	P	H
		2389.95	50.67	-3.33	54	47.55	32.88	7.1	36.86	276	108	A	H
		2414	106.76	---	---	103.58	32.9	7.13	36.85	276	108	P	H
		2414	99.51	---	---	96.33	32.9	7.13	36.85	276	108	A	H
		2389.95	61.97	-12.03	74	58.85	32.88	7.1	36.86	103	201	P	V
		2389.95	44.99	-9.01	54	41.87	32.88	7.1	36.86	103	201	A	V
		2410	101.21	--	--	98.03	32.9	7.13	36.85	103	201	P	V
		2412	93.42	--	--	90.24	32.9	7.13	36.85	103	201	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

2.4GHz 2400~2483.5MHz

WIFI 802.11g (Harmonic @ 3m)

WIFI Ant.	Note	Frequency	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Path Loss	Preamp Factor	Ant Pos	Table Pos	Peak Avg.	Pol.
1		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11g CH 01 2412MHz		4830	40.72	-33.28	74	61.65	34.2	10.25	65.38	300	0	P	H
		4830	40.13	-33.87	74	61.06	34.2	10.25	65.38	100	0	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Note symbol

*	Fundamental Frequency which can be ignored. However, the level of any unwanted emissions shall not exceed the level of the fundamental frequency.
!	Test result is over limit line.
P/A	Peak or Average
H/V	Horizontal or Vertical



A calculation example for radiated spurious emission is shown as below:

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11b		2390	55.45	-18.55	74	54.51	32.22	4.58	35.86	103	308	P	H
CH 01													
2412MHz		2390	43.54	-10.46	54	42.6	32.22	4.58	35.86	103	308	A	H

1. Path Loss(dB) = Cable loss(dB) + Filter loss(dB) + Attenuator loss(dB)
2. Level(dBμV/m) =
Antenna Factor(dB/m) + Path Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)
3. Over Limit(dB) = Level(dBμV/m) – Limit Line(dBμV/m)

For Peak Limit @ 2390MHz:

1. Level(dBμV/m)
= Antenna Factor(dB/m) + Path Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)
= 32.22(dB/m) + 4.58(dB) + 54.51(dBμV) – 35.86 (dB)
= 55.45 (dBμV/m)
2. Over Limit(dB)
= Level(dBμV/m) – Limit Line(dBμV/m)
= 55.45(dBμV/m) – 74(dBμV/m)
= -18.55(dB)

For Average Limit @ 2390MHz:

1. Level(dBμV/m)
= Antenna Factor(dB/m) + Path Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)
= 32.22(dB/m) + 4.58(dB) + 42.6(dBμV) – 35.86 (dB)
= 43.54 (dBμV/m)
2. Over Limit(dB)
= Level(dBμV/m) – Limit Line(dBμV/m)
= 43.54(dBμV/m) – 54(dBμV/m)
= -10.46(dB)

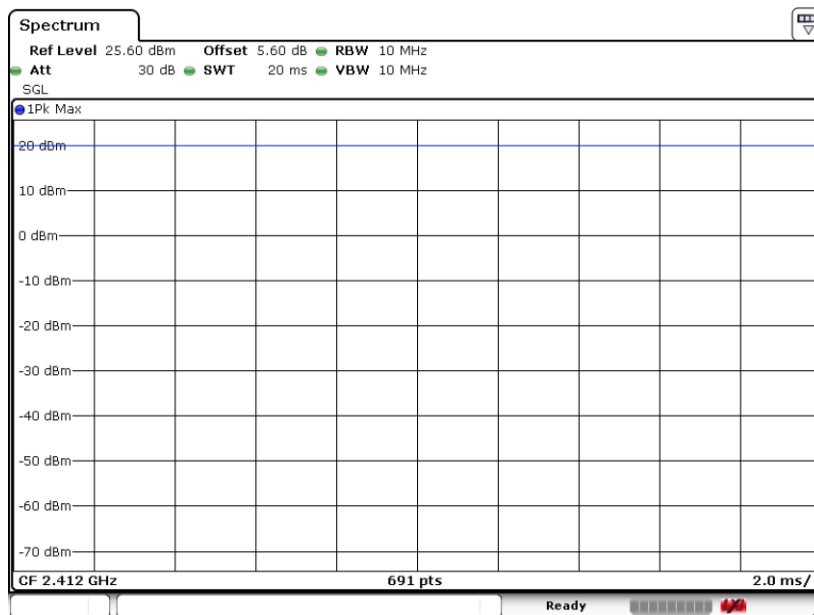
Both peak and average measured complies with the limit line, so test result is “PASS”.



Appendix D. Duty Cycle Plots

Band	Duty Cycle(%)	T(ms)	1/T(kHz)	VBW Setting
802.11b	100	-	-	10Hz
802.11g	97.46	1.391	0.719	0.72KHz
802.11n HT20	97.30	1.304	0.767	0.82KHz
802.11n HT40	95.14	0.652	1.533	1.6KHz

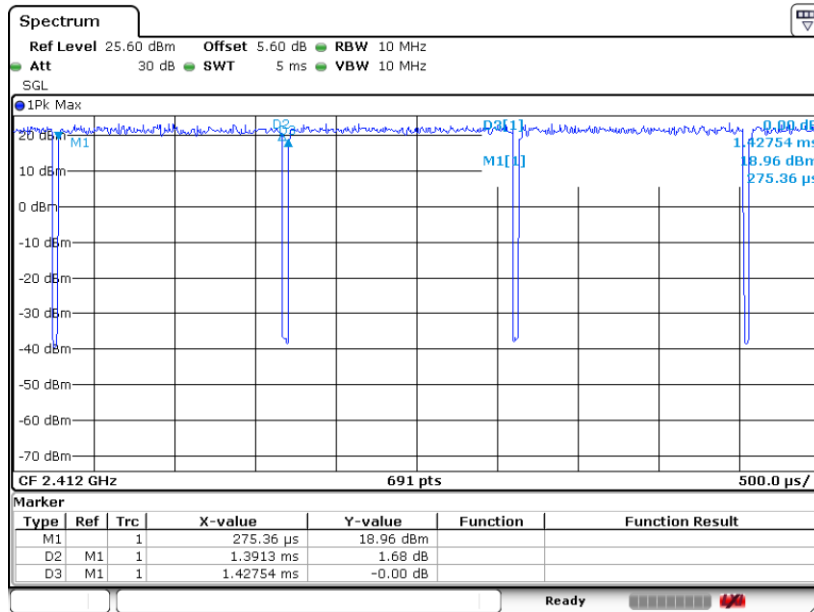
802.11b



Date: 30 JUN.2022 00:27:25

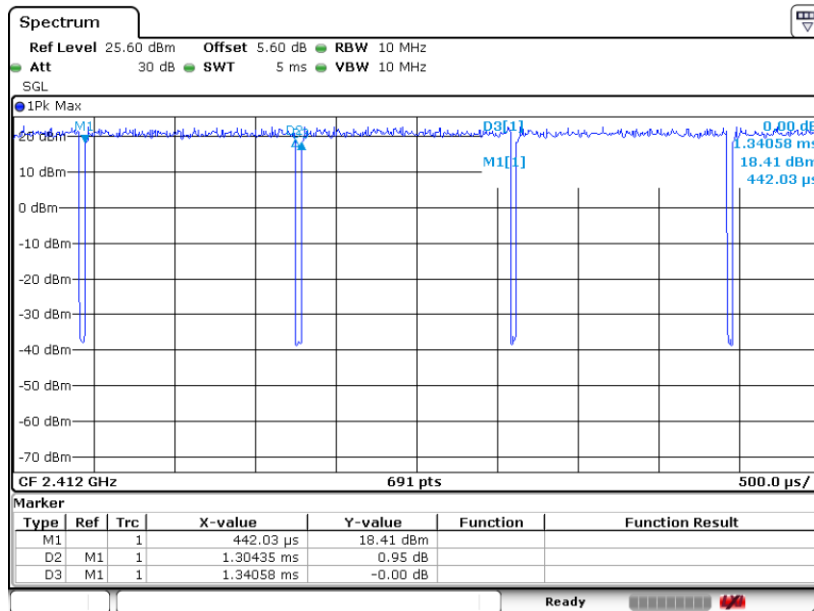


802.11g



Date: 30 JUN 2022 00:28:41

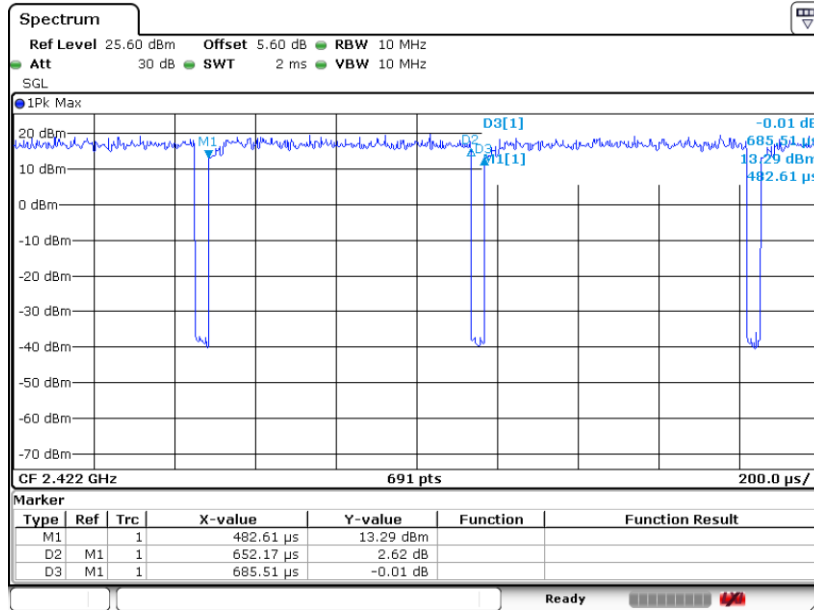
802.11n HT20



Date: 30 JUN 2022 00:29:53



802.11n HT40



Date: 30 JUN 2022 00:31:37